

$$\sin^2 \varphi + \cos^2 \varphi = 1$$

$$\Rightarrow \sin \varphi = \sqrt{1 - \cos^2 \varphi}$$

$$\sin \varphi = 0,43589$$

$$P_3 = \sqrt{3} UI \cos \varphi$$

$$= \sqrt{3} \cdot 110 \cdot 200 \cdot 0,9 \cdot 10^3$$

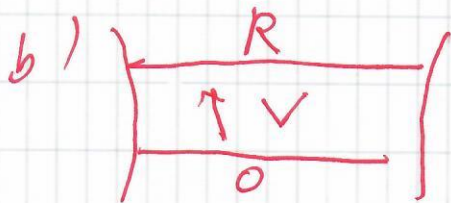
$$= 34254 \cdot 10^3 \text{ W}$$

$$= 34,254 \text{ MW}$$

$$Q_3 = \sqrt{3} UI \sin \varphi = \sqrt{3} \cdot 110 \cdot 10^3 \cdot 200 \cdot 0,435$$

$$= 11,59 \text{ MVA}$$

$$S = \sqrt{3} UI = \sqrt{3} \cdot 110 \cdot 10^3 \cdot 200 = 38,06 \text{ MVA}$$

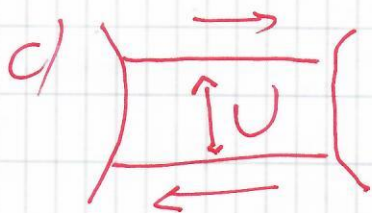


$$U = 110 \text{ kV} = V$$

$$P = VI \cos \varphi = 110 \cdot 10^3 \cdot 200 \cdot 0,9 = 19,8 \text{ MW}$$

$$Q = VI \sin \varphi = 110 \cdot 10^3 \cdot 200 \cdot 0,435 = 9,59 \text{ MVA}$$

$$S = VI = 110 \cdot 10^3 \cdot 200 = 22 \text{ MVA}$$



$$P = UI = 110 \cdot 10^3 \cdot 200 = 22 \text{ MW}$$

a)

$$(2) R = \frac{8L}{S} = \frac{S_{AL} \ell}{S_{AL}} = \frac{29 \Omega \text{ mm}^2}{\text{km}} \cdot \frac{100 \text{ km}}{148,9 \text{ mm}^2} = 19,476 \Omega$$

b)

$$\Delta P_1 = RI^2 = 19,476 \cdot 200^2 = 0,779 \text{ MW}$$

$$\Delta P = 3RI^2 = 2,337 \text{ MW}$$